

# GOMOKU/RENJU



CAT. NO.  
26-3069

Radio Shack

TRS-80

COLOR  
COMPUTER

TM

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# **Gomoku / Renju**

**Radio Shack**

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## **Introduction**

Gomoku and Renju are ancient oriental games of strategy for two players. Your Gomoku / Renju program for the TRS-80 Color Computer matches you against your choice of the computer or another person in a game of Gomoku or the similar but more complex Renju. If you are a beginner, the program will help you master the various strategies of these games using eight different levels of play. If you are already a master, you will find the computer a challenging opponent, especially at the higher levels. This manual contains the game rules and descriptions of special program features.

## **System Requirements**

A TRS-80 Color Computer with at least 16K RAM  
A standard television (color recommended)  
Joystick (optional)

## **Loading Instructions**

- 1 . Before inserting or removing a Program Pak™ ROM cartridge, make sure the computer is **off**. Failure to do so could result in damage to the Program Pak.
- 2 . Connect the Color Computer to the television set and move the antenna switchbox control to Computer (or Game). See your TRS-80 Color Computer Operation Manual for further details regarding connections.

- 3 . If a joystick controller is being used, plug it into the jack marked **LEFT JOYSTK** located on the back of the computer.
- 4 . Insert the Gomoku / Renju Program Pak, label side up, into the slot located on the right side of the computer. Press firmly until it securely engages, but do not force it.
- 5 . Turn on the television and tune it to channel 3 or 4 (whichever is least active in your area).
- 6 . Turn on the Color Computer. You may have to adjust the focus on the television or press the Reset button (located on the back of the computer) to obtain a clear picture.

The games are played on a pattern or grill of intersecting lines. The two players move alternately by placing a piece of their own color on any vacant point where two lines cross. Blue always moves first.

**Note:** Traditionally, the two players in both Gomoku and Renju are referred to as Black and White to correspond to the colors of the pieces. In this manual, they will be identified as Blue and Yellow to match the colors on the screen.

A game is won by the first player to create a horizontal, vertical, or diagonal line of five adjacent pieces of his own color. The computer displays the message **I WIN** or **YOU WIN**, in the color of the winning side, and shows the winning line by moving the cursor along it. If every position is occupied and neither player has won, the game is a draw and the computer displays **DRAW**.

## Choosing a Game

If you intend to play Gomoku, there is no need for you to change the game. If you prefer to play Renju, press **R**, and the computer will display RENJU at the top of the board.

## Entering Moves

The computer accepts a move whenever the message YOUR MOVE or NEXT MOVE is displayed. The color of the message is the same as the color of the piece to be played next, and a flashing cursor is always present while the computer is waiting for you to make a move.

You can enter moves from the keyboard or through the joystick, as explained below.

**Keyboard:** Move the flashing cursor to the desired position using the four arrow keys. Each press of one of the arrow keys moves the cursor one position in the direction indicated on that key. When the cursor is flashing on the correct position, press **ENTER** to complete your move. (**Note:** A key automatically repeats if pressed and held down.)

**Joystick:** The joystick should be plugged into the left joystick jack on the back of the computer. When the computer is first switched on, the joystick is disabled. To enable the joystick, press either the **FIRE** button on the joystick or the **J** key on the keyboard. A further press of the **J** key

disables the joystick again. To enter a move using the joystick, move the joystick in the direction in which you want the cursor to move. When the cursor is flashing on the correct position, press the **FIRE** button to enter your move.

With practice, you will find that you can enter moves quickly and accurately using the joystick.

When it is the computer's turn to move, the message **MY MOVE** is displayed in the computer's color, and a spiraling symbol indicates that the computer is thinking.

## **The Rules of Gomoku**

In Gomoku it is legal to create an "overline" with more than five adjacent pieces of one color in a line, but an overline does not win the game. (An overline occurs, for example, when two adjacent blue pieces and three adjacent blue pieces in the same line are separated by one unoccupied position, and Blue then places a piece on this position. The result is an overline of six adjacent blue pieces.)

The program allows a range of board sizes, from 9 x 9 to 15 x 15. It also allows you to play against the computer on a number of difficulty levels, ranging from Level 1 (least difficult) to Level 8 (most difficult). When the Gomoku / Renju Program Pak is inserted and the computer is first switched on, the program is ready to play a game of Gomoku on a 15 x 15 board, with the difficulty level set at 3. (To change the board size and difficulty level, see Page 7, "Special Options.")

## **The Rules of Renju**

Renju is similar to Gomoku but is far more complex because of the restrictions placed on Blue. These restrictions are necessary for a very strong player since otherwise Blue can play correctly from the start and win by force as in Gomoku.

Renju is played only on a 15 x 15 board. Blue moves first and must play on the central position. (If Blue tries to play in a different place on the first move, the computer displays ???? If this occurs, you may start a new game or use the takeback feature, as described in "Special Options.")

### **Restrictions on Blue**

It is customary for stronger players to play Blue and to be restricted in their choice of opening patterns. If you intend to play Yellow against the computer, you have the option of restricting Blue's opening moves by using the **B** command (described on page 13 in the section "Book Openings").

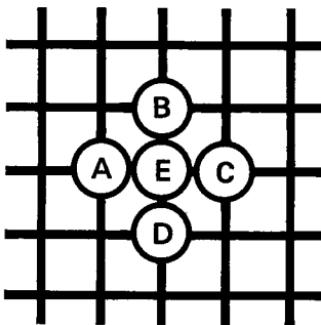
In addition to any opening move restrictions you place on Blue, there are three types of prohibited moves which Blue may never make:

- 1 . Blue must not make a move which creates a 3-3. In other words, Blue must not make a move which simultaneously creates two lines, each of which contains three blue pieces and two vacant positions. (The blue pieces do not all need to be adjacent to each other.)

Note that in order for a line to be counted as a genuine 3, it must be capable of being legally extended into a 4 and a 5. If extending this line into a 4 would be prohibited because of restriction 2 (below), or if extending it into a 5 would create an overline, then it is not a genuine 3 because it cannot be legally extended.

**Example:** In the diagram below, suppose that Blue plays his pieces in the order A, B, C, D, E. A 3-3 occurs because the playing of piece E results in the creation of two rows of 3. If, however, yellow pieces had been placed on the position adjacent to A on the left or on the position adjacent to C on the right, the playing of E would not create a 3-3 because Row A-E-C cannot be extended to a 4 and 5.

Now suppose Blue plays in the order A, E, C, B, D. A 3-3 does not occur because the last piece played results in only one 3 (B-E-D). (A-E-C is already in existence.)



2. Blue must not make a move which creates a 4-4. In other words, Blue must not make a move which simultaneously creates two lines, each of which contains four blue pieces and one vacant position. (The blue pieces do not all need to be adjacent to each other.)  
Note that in order for a line to be counted as a genuine 4, it must be capable of being legally extended into a 5 without creating an overline.
3. Blue must not make a move which creates an overline. If Blue inadvertently makes a prohibited move, or is forced into making one of these moves in order to prevent Yellow from creating a winning 5, then Blue loses the game at once. The computer announces the winner in Yellow and flashes the cursor over the illegal move.

### **Restrictions on Yellow**

There are no moves prohibited to Yellow. Even if Yellow creates an overline, then Yellow wins.

### **Special Options**

There are a number of special options available in this program. To choose an option, simply press the appropriate key.

## Instructions (I)

Pressing the (I) key displays a page of instructions on the screen. Pressing the desired key performs that instruction and returns you to the game. Pressing the space bar returns you to the game. You may find it useful to refer to these instructions if you do not have this manual at hand.

## Make Move (M)

At the start of a game, if you wish to play Yellow, press (M) and the computer makes the first move. At any other time when it is your turn to move you may also switch sides and ask the computer to move by pressing the (M) key.

When it is the computer's turn to move, pressing (M) ends the "thinking" process, and the program will play the best move that it has found so far. There may be a delay of a second or so before the computer responds to this command.

## Change Level (L)

The first time that you press the (L) key the computer briefly displays the current playing level. Each subsequent press of the (L) key (while the level is being displayed) increases the level by 1. After reaching Level 8, the most difficult level, the program returns to Level 1.

As the playing level and the strength increase, the program looks deeper and deeper into the game. The deeper it searches the more time it needs to think. Because of the time element, the use of the levels above Level 5 is recommended only for studying the theory of the games.

### **Enter Position (E)**

This option allows two people to use the screen as their board, and play a game against one another. You may also enter moves for both sides, if you press the (E) key first. The program checks that all the moves are legal and announces when the game is over.

To exit from this mode, press (M) and the computer will make the next move.

### **New Game of Renju (R)**

When you first insert the Program Pak and switch on the power to your Color Computer, the program is ready to play a game of Gomoku. If you prefer to play Renju, press the (R) key.

During a game you may decide to stop playing and start another game of Renju. When you press (R) a NEW GAME? prompt appears. The computer begins a new game of Renju only if you respond to the question by pressing (Y). Press the space bar if you wish to return to the game in progress.

## New Game of Gomoku ((G))

This command operates in the same way as the **R** command, except that you do not need to press **G** when you first turn on the computer.

## Change Board Size ((S))

This command applies only to Gomoku, because Renju is always played on a 15 x 15 board.

The first press of the **S** key shows the current board size. While this size is being displayed, subsequent presses of the **S** key decrease the size by one. When the smallest board is displayed (9 x 9), the next press of the **S** key returns it to 15 x 15.

If you try to change the size of the board during a game, the program asks NEW GAME? If you respond by pressing **Y**, it clears the board before drawing the new-sized board on the screen.

## Computer Plays Itself ((P))

You can select the “autoplay” mode by pressing **P**. In this mode, the program plays against itself. When one game finishes, the board is cleared and another game starts. To exit from autoplay, press **M** and the computer will expect you to make the next move.

### Show "Hint" Move (H)

If it is your turn and you don't know what move to make, you can request a hint by pressing (H). The program flashes a sensible move on the screen.

If it is the computer's turn to move, pressing (H) displays the move that the program currently thinks is best. The move is displayed as a flashing piece. (This command does not function when the DISPLAY THINKING feature is in effect.)

### Display Thinking (D)

If you press (D), the program displays each move it considers as it analyzes the enormous tree of possibilities in the game. Pressing (D) again turns off this feature.

### Select Book Openings (B) (Blue prohibitions in Renju)

In the game of Renju, Blue would start with a decisive advantage were it not for the restrictions imposed on some moves. One of these restrictions allows Yellow to prohibit a certain number of options open to Blue on his second move. There are 24 different ways (known as "book openings") in which Renju players usually begin the game, and any number of these may be prohibited at the start of a game through the use of Option B. If you wish to use this optional feature, see Page 13, "Book Openings."

### **Takeback (SHIFT)(I)**

You may take back a move if you change your mind or realize that you have made a mistake. It is possible to take back any number of moves, even to the start of the game if you wish. Each time you press the (I) key with the SHIFT key held down, the previous move is taken back.

### **Step Forward (SHIFT)(I)**

This is the reverse of takeback. You can use the step forward feature to restore moves after taking them back or to replay a game from the start, provided that no moves have been made in a new game. If you wish to replay a game from the start, press the (G) or (R) key as appropriate. When the program asks NEW GAME?, respond by pressing (Y). You can now hold down the SHIFT key and press (I) each time you wish to step forward one move.

### **Joystick ON/OFF (J)**

Pressing the (J) key toggles the joystick on and off.

## Stop Computing (**BREAK**)

This command may be used when you are thinking about a move or in autoplay mode while the computer is thinking.

If you press the **BREAK** key when it is your turn to move, the NEW GAME? prompt appears. If you respond with **Y**, the computer starts a new game of the same type as you have just been playing.

If you press **BREAK** while the computer is thinking, the program expects you to make the next move. At the end of a game in autoplay mode, there is a delay of a few seconds before the final display is removed from the screen and the next game begins. Pressing **BREAK** during this delay causes the screen to "freeze" on the final display and exits from autoplay mode. Pressing any key allows the program to continue.

## Book Openings

A book opening is simply an opening strategy, or particular sequence of opening moves. The Gomoku / Renju program has a book openings library of 78 variations, some of which go as far as 21 moves into the game. These openings are used by the program in Renju and also in Gomoku when it is played on a 15 x 15 board.

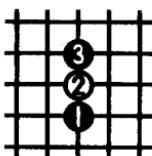
The 24 basic opening patterns are shown below. In these patterns, the following applies:

1. Represents Blue's first move (on the central position)
2. Represents Yellow's first move
3. Represents Blue's second move

## THE DIRECT OPENING

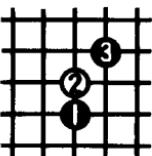
Second move (Yellow) is horizontally or vertically adjacent to first move (Blue)

No. 1 Direct



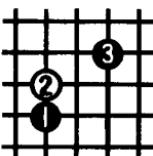
KANSEI

No. 2 Direct



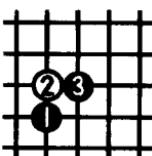
KEIGETSU

No. 3 Direct



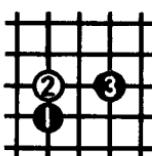
SOSEI

No. 4 Direct



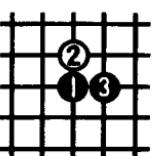
KAGETSU

No. 5 Direct



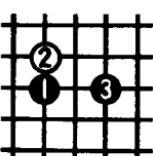
ZANGETSU

No. 6 Direct



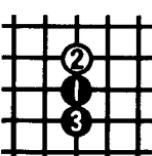
UGETSU

No. 7 Direct



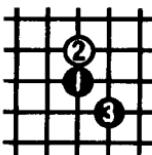
KINSEI

No. 8 Direct



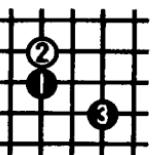
SHOGETSU

No. 9 Direct



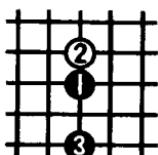
KYUGETSU

No. 10 Direct



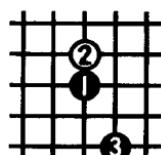
SHINGETSU

No. 11 Direct



ZUISEI

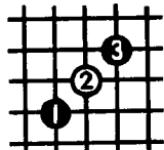
No. 12 Direct



SANGETSU

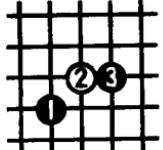
THE INDIRECT OPENING  
Second move (Yellow) is diagonally adjacent  
to first move (Blue)

No. 1 Indirect



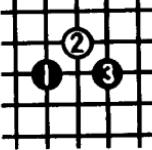
CHOSEI

No. 2 Indirect



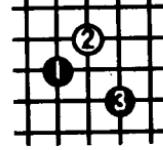
KYOGETSU

No. 3 Indirect



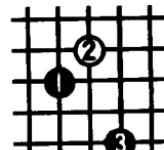
KOSEI

No. 4 Indirect



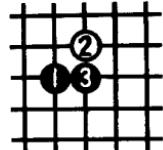
SUIGETSU

No. 5 Indirect



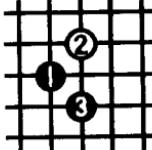
RYUSEI

No. 6 Indirect



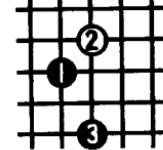
UNGETSU

No. 7 Indirect



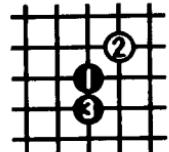
HOGETSU

No. 8 Indirect



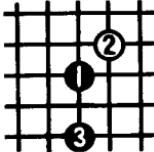
RANGETSU

No. 9 Indirect



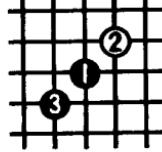
GINGETSU

No. 10 Indirect



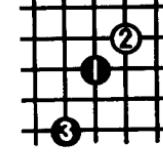
MYOJO

No. 11 Indirect



SHAGETSU

No. 12 Indirect



MEIGETSU

When you are playing Yellow in a game of Renju against the computer, you may prohibit certain opening patterns by using the **B** command. To do this, press **B** before any moves have been played. The computer displays each of the 24 possibilities in turn, showing an X if the opening is prohibited and a check mark if it is not. It also displays a CHANGE? prompt. If you respond by pressing **Y**, the status of the opening is reversed. If you press **N** or **B**, the status of the opening remains unchanged. (Note: After pressing **Y** for "yes", a press of the **N** or **B** key is needed to continue on to the next opening.)

Pressing any other key exits from this mode. Pressing **R** or **G** exits from this mode and gives the prompt NEW GAME? If you exit without allowing at least one "direct" and one "indirect" type of move, the program allows by default the 12th pattern of each type.

The computer's memory retains the current status of each of the 24 openings until you change the level.

(Note: The computer observes prohibitions made with the **B** command when it is playing Blue. When a person is playing Blue, the program does not check whether any prohibitions made with the **B** command are observed.)

If you do not use the **B** command in Renju to change the prohibition status, the program deliberately does not play some of the stronger openings on its lower levels:

- LEVELS 5-8 The program may choose any variation but has a preference for the stronger openings.
- LEVEL 3 The program may choose any opening except for two: direct no. 4 and indirect no. 7.
- LEVEL 2 The program may choose from direct openings 7-12 and indirect openings 8-12.
- LEVEL 1 Same as for Level 2, but the openings book is used for only the first four moves of the game.

When playing Gomoku, it is not possible for you to prohibit any openings. On Level 1 in Gomoku the openings book is used for only the first four moves of the game. Levels 2-8 in Gomoku choose from the whole of the openings book.

Although the program has preferences for certain opening patterns, it deliberately varies its choice of pattern to ensure that you will be able to experience a wide variety of games.



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